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## OUTLINE OF THE USE OF RESPIRATORS AND OF OXYGEN IN POLIOMYELITIS

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- I. First, prevent, if possible, the necessity for the use of respirators or oxygen, by maximum rest for the patient and minimum handling. Rest and reassurance are of importance.
- II. Determine nature and causes of the breathing difficulty  
Possible causes:
  - A. Disturbances of breathing mechanism
    1. Tightness of muscles of breathing
    2. Weakness of muscles of breathing
    3. Failure of respiratory center
  - B. Interference with O<sub>2</sub> and CO<sub>2</sub> exchange
    1. In pharynx
      - a. Accumulation of fluids due to inability to swallow
      - b. Paralysis of tongue
    2. In larynx
      - a. Abductor paralysis of vocal cords
      - b. Spasm of glottis
    3. In trachea and bronchi
      - a. Accumulation of mucus from bronchitis
      - b. Inhalation of saliva from pharynx
      - c. Inhalation of vomitus
    4. In lungs
      - a. Atelectasis
      - b. Pneumonia
      - c. Pulmonary edema
    5. In central nervous system; edema
  - C. Contributory factors
    1. Panic and hysteria
    2. Sedation
    3. Anemia
    4. Air swallowing
    5. Vomiting
    6. Fatigue

- III. Remove causes or aggravating factors, including:
  - Postural drainage, suction for pharyngeal fluids
  - Calming the panicky
  - Encouraging natural sleep without sedation
  - Transfusion if necessary
  - Attention to the bowel and bladder
- IV. Give oxygen comfortably—preferably before there are definite signs of need.
- V. Dehydrate with 10 per cent glucose intravenously and do not flood patient with fluids
- VI. Indications for artificial respiration. (Opinions differ.)
  - Vary according to type of case:
    - a. Pure spinal—certainly if there is cyanosis
    - b. Pure bulbar—usually only in extremis
    - c. Mixed bulbar and spinal—keen clinical judgment and experience necessary
- VII. Types of artificial respiration available
  - 1. Tank respirator
  - 2. Chest respirator
  - 3. Rocking bed
  - 4. Manual
  - 5. Phrenic stimulation
- VIII. Essential precautions in use of tank respirators
  - A. Spinal cases
    - 1. Constant observation without disturbance
    - 2. Adequate oxygen supply
    - 3. Occasional change of position
    - 4. Occasional change of pressure
    - 5. Early weaning from respirator and early breathing exercises
    - 6. Gradual decrease of pressure if possible and weaning to rocking bed
  - B. Bulbo-spinal cases
    - 1. Establish clear airway—nose and throat consultation
    - 2. Slower to put in respirator
    - 3. Postural drainage, prone or side position
    - 4. Adequate oxygen supply
    - 5. Watch blood pressure—neosynephrine by hypo if falling

C. Bulbar

Respiratory center involved with irregular, incoördinate breathing, prescribe:

1. Caffein
2. Diaphragmatic respiration, by rocking bed or phrenic stimulation

IX. Tracheotomy in polio

A. Indications

1. Bilateral abductor paralysis of larynx
2. Inability to keep airway clear
3. Progressive hypoxia, not otherwise correctible.

B. Advantages

1. Easy removal of secretions
2. Ability to do bronchoscopy through wound, if proper oxygen attachment is available
3. Easier maintenance of adequate oxygen tension
4. Easier treatment of pulmonary edema with positive pressure
5. Easier to care for patient

C. Disadvantages

1. Operation an ordeal to patient who needs rest
2. Possible complications
3. High mortality of tracheotomy in poliomyelitis
4. Tube narrows the airway
5. Tube increases intratracheal secretions
6. Makes adequate oxygen administration difficult unless proper attachment is available

D. Indications insufficient in themselves

1. Inability to cough
2. Inability to swallow
3. Moderate laryngeal paralysis
4. Pulmonary edema
5. Atelectasis

E. Personal opinion: Tracheotomy should be avoided if in any way possible.